PROGRESS
OF
MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

FRANCIS H. WILLIAMS, M.D.,

ASSISTANT PROFESSOR OF THERAPEUTICS IN HARVARD UNIVERSITY.

FORMULÆ FOR DYSPEPSIA.

HUCHARD publishes, in *Les Nouveau Remèdes*, April 8, 1890, several formulæ which are claimed to be of value in the treatment of dyspepsia, especially with a view of preventing the development of flatulence. Among the remedies which the author has found most satisfactory, chloroform is the best. On account of its irritant action, it should not be given in a state of purity or in capsules, as is so frequently done, but as chloroform-water.

Saturated chloroform-water	150 parts.
Distilled water	120 "
Mint-water	30 "

Of this mixture a tablespoonful may be taken either immediately before or during a meal.

When it is desired to employ the so-called absorbing powders, the following may be prescribed:

Powdered charcoal	ʒij.
Sodium bicarbonate	ʒjss.
Calcined magnesia	ʒj.
Powdered columbo	ʒss.

Make forty powders. One powder may be taken half an hour or an hour before eating. If an antiseptic action is desired, at the time of eating:

Beta-naphthol Salicylate of bismuth Magnesia	āā gr. xlv.

Make thirty powders, which may be administered as above.

MENTHOL IN THE HYPEREMESIS OF PREGNANCY.

This is in some cases a grave complication of pregnancy. Copeman's treatment, dilatation of the os and cervix uteri, does not suit every case. DR. GOTTSCHALK recently described a case where, in a woman aged twenty-six, who had been pregnant three times, uncontrollable vomiting set in during the second month of her fourth pregnancy. Neither cocaine nor Copeman's treatment availed, and the sickness continued until abortion was induced. The patient became pregnant for the fifth time, and the vomiting returned, hæmatemesis taking place. A draught consisting of menthol 1 part, rectified spirits 20 parts, and distilled water 150 parts, was prescribed, and a tablespoonful given every hour. The vomiting ceased after the third dose, and pregnancy proceeded to term without any further complication. A second case was also successfully treated with menthol.—*British Medical Journal*, June 14, 1890.

PILOCARPIN IN DRYNESS OF THE TONGUE.

Extreme dryness of the tongue is, under some circumstances, a very distressing symptom, and one which does not readily yield to treatment whilst the concomitant cause remains in operation. The sucking of ice, or sipping of bland fluids gives but temporary and inadequate relief, and the same may be said of glycerin employed as a paint.

In this condition DR. BLACKMAN has used successfully one-twentieth of a grain of pilocarpin in the form of a gelatin lamel allowed to dissolve on the tongue previously moistened by a sip of water. This dose quickly establishes a moderate flow of saliva, which persists for at least twenty-four hours, and is unaccompanied by excessive perspiration. The altered state of the mouth is often described by the patient as being delightful.

It is scarcely necessary to add that due caution ought to be exercised in the use of so potent a remedy.—*British Medical Journal*, June 14, 1890.

CHLORODYNE POISONING THROUGH THE MOTHER'S MILK.

A case is reported in the *Australasian Medical Gazette* recently, of a woman who had given birth to twins, and was suckling them both. One evening she took a dose of chlorodyne for the relief of pain, and soon after taking the drug suckled the infants. The children were found the following morning profoundly narcotized, and died before evening.

EXCRETION OF BALSAMS IN THE URINE.

The use which is now being made of balsam of Peru in the treatment of tubercular disease has aroused considerable interest in the question as to whether it is apt to produce nephritis during its excretion by the kidneys. DR. RALPH STOCKMAN has made a number of observations on it and other balsams with the view of determining this. The observations were carried out on two medical men and upon rabbits, and were limited to the four balsams in the British Pharmacopœia, namely, balsam of Peru, balsam of tolu, prepared storax, and benzoin. The result of these observations seems to show that all these balsams can be given in as large a dose as is ever desired in practice, without any risk of producing albuminuria or nephritis. The amount of irritation which they cause is never sufficient to injure the healthy kidney, although it may irritate seriously one which is already diseased. In some, at least, of the recorded cases of albuminuria, after the administration of balsams, a resinous body in the urine has been mistaken for albumin.—*British Medical Journal*, June 14, 1890.

ACUTE ŒDEMA GLOTTIDIS AFTER POTASSIUM IODIDE.

Cases of this nature are few in number, and the one reported by DR. GROENOUW is of practical interest. A strong, healthy man, forty-three years of age, suffering from optic atrophy, and with the urine quite free from albumin and sugar, was treated with iodide of potassium, in the form of a watery solution, in doses of seven to fifteen grains thrice daily. On the afternoon of the second day, when he had taken about forty grains of the salt, he complained of a feeling of rawness in the throat; by the evening of the fourth day there was hoarseness, with pain on swallowing, localized in the right side of the larynx. These symptoms, which were not by any means prominent, were not more pronounced on the evening of the sixth day, after the use of a little over three drachms of iodide. The same night, after two hours' quiet sleep, the patient awoke, began to cough, and noticed suddenly that although the expiration was free, the inspiration was difficult, and he felt as if a valve were in the throat. The difficulty lessened in the space of two hours, and he slept again, the dyspnœa having quite disappeared by next morning. In the afternoon, on examination, the right ventricular band was œdematous, as also the mucous membrane over the arytenoid cartilage and the ary-epiglottic ligament. After an intermission of two days the iodide was resumed; and although the dose was a full one, no further symptoms of iodism appeared. In spite of the severity of the attack tolerance was established. The iodide of potassium given was exactly the same as other patients were using, and it is not likely that the symptoms were due to impurity of the drug.

Groenouw observed a similar case two years ago in a woman of sixty-six, who was the subject of moderately enlarged thyroid, but without difficulty of breathing, and was suffering from oculo-motor palsy of one eye, for which iodide of potassium was prescribed in small doses. After seven grains, severe coryza and conjunctivitis, with great dyspnœa and loss of voice, came on. Examination showed marked pharyngeal catarrh and evident swelling and redness of the ventricular bands. Three days later, when the symptoms had subsided, four grains were given daily for three days; but on being increased to twice daily there appeared—more or less every time—hoarseness, difficulty of swallowing, and pain in the head. The drug was accordingly stopped for four days, and then the patient took about four grains daily, diluted with much water, the dose being gradually increased in the course of the next two weeks to fifteen grains a day. On attaining this amount, it had to be reduced on account of pain in the throat and general restlessness; and seven days later it was discontinued altogether.

Groenouw thinks the following conclusions may be drawn: After the administration of iodide of potassium, there occurs in certain rare cases great dyspnœa due to œdema of the glottis; sometimes so extreme as to demand rapid tracheotomy. It does not arise from long use or large doses—relatively small amounts have hitherto induced it; and other symptoms of iodism, such as headache, are wanting. The action is local upon the larynx—not a part of a general œdema. Its cause is certainly the iodine, not the potassium, and it cannot be ascribed to any impurity. No local or general diseased state—for instance, cardiac or renal disease—can be recognized; and the cause must be looked for rather in an idiosyncrasy of the individual, although even this is not by any means absolute, as a complete tolerance may be established after a few days' pause.—*Practitioner*, June, 1890.

Bromoform in Pertussis.

Stepp reported a hundred cases of whooping-cough in which bromoform was used with success (*Deutsche med. Wochenschrift*, 1889, Nos. 31, 44), and recently Dr. Neumann has treated sixty-one cases with this drug, or with antipyrin, phenacetin, quinine, resorcin, or benzoin (insufflations). Fifteen of the patients were less than a year old, and a number of the cases were severe in character though there were few serious complications. Bromoform is conveniently administered suspended in sweetened water, half a drop to a drop every two hours to a child two years old.

The intensity and the number of attacks in the twenty-four hours is diminished. The duration of the disease is not shortened, according to Dr. Neumann, though Stepp is of the opinion that this is also a result of its action.

It is harmless, not difficult to administer, and is worthy of a trial, though it is no more a specific than are quinine and antipyrin.—*Therapeutische Monatshefte*, July, 1890.

Dr. Löwenthal, after testing the drug in more than one hundred cases, is more enthusiastic about its results than some others.

It is important to use a preparation which is perfectly clean and has not become discolored through decomposition by exposure to the light.

Children up to one year of age may have 2 to 4 drops three times a day, from two to four years 3 to 4 drops three or four times a day. Up to eight years 4 or 5 drops three or four times a day, according to the number and intensity of the attacks.

The good effects of the drug were apparent sometimes on the second or on the third or fourth day. The course of the disease is shortened, the children being relieved in from two to four weeks. The appetite is improved; in simple cases languor and drowsiness were noticed after each administration of the bromoform. In one case—a weakly child fifteen months old—where too large a dose had probably been given, narcosis ensued. Recovery followed the subcutaneous injection of ether, and camphor administered in powder.

Dr. Löwenthal believes bromoform to be more favorable than any other treatment of pertussis.—*Therapeutische Monatshefte*, July, 1890.

Report of Hyderabad Chloroform Commission.

In the *Lancet* for June 21, 1890, a considerable number of tracings made by the Commission are reproduced, together with the conclusions drawn from them by Surgeon-Major Lawrie. Chloroform, when given continuously by any means which ensures its free dilution with air, causes a gradual fall in the mean blood pressure, provided the animal's respiration is not impeded in any way, and it continues to breathe quietly without struggling or involuntary holding of the breath. As this fall continues, the animal first becomes insensible, then the respiration gradually ceases, and lastly the heart stops beating.

If the chloroform is less diluted the fall is more rapid, but it is always gradual so long as the other conditions are maintained; and, however concentrated the chloroform may be, it never causes sudden death from stoppage of the heart. So far as experiments on animals go, chloroform has no power of increasing the tendency to either shock or syncope during operations.

The Commission found, however, that struggling during chloroform inhalation, or anything which interfered with the breathing in any way, such as holding the breath or asphyxia, produced irregularities in the circulation and in the action of the heart. Even such slight interference as is brought about by forcibly pulling the tongue forward had this effect. In fact, pulling the tongue was the only proceeding, short of direct irritation of the vagus, that appeared to produce shock. Inhibition of the heart's action and slowing of the circulation, with rapid fall of pressure, caused by irritation of the vagus, proved to be a safeguard rather than a danger.

The Commission found that an effect precisely similar to that caused by electrical stimulation of the vagus is produced through the same nerve—(*a*) in holding the breath, which occurs in the early stages of chloroform administration; (*b*) in asphyxia; (*c*) sometimes after the respiratory centre is paralyzed in the later stages of chloroform poisoning.

The experiments of the Commission proved that death from chloroform is invariably due to an overdose; and the question which next arose was, Are there any circumstances which make chloroform inhalation dangerous, and, as it were, open the door to an overdose, or make the action of the drug appear capricious?

It is fully demonstrated by the experiments of the Commission that struggling, holding the breath, any form of asphyxia, or any kind of interference with the breathing are dangerous in chloroform administration. Obviously either complete asphyxia or continuous holding of the breath, if this were possible, would be sure preventatives of poisoning by chloroform; but the danger in such conditions is due to the fact that they must alternate with extra-vigorous and deep respiration. Struggling makes the inhalation of chloroform dangerous, because it either partially asphyxiates the patient, or alternately does this and accelerates the respiration and circulation, so increasing the amount of chloroform inhaled and hastening the rapidity with which the chloroform is conveyed to the brain and nerve centres. Holding the breath causes asphyxia, and asphyxia produced in this or in any other manner poisons and stimulates the respiratory centre, and, on the one hand, makes it extremely obnoxious to paralysis by chloroform; while, on the other, it leads to gasping and deep inspirations, by which an overdose is very soon taken in. The rapidity of chloroform poisoning when asphyxia is produced is much the same as it would be if you threw a man into a pond, and held a chloroform inhaler over his head every time he came to the surface to take a breath. This is exactly what a timid or badly-taught operator often does. He measures his chloroform and pours it into a patent inhaler, which he then applies to the patient's face. The patient holds his breath and becomes deadly pale, while his vagus slows the heart and circulation. Presently the patient takes a deep gasp, and as soon as the chest begins to move, the chloroformist thinks there is no danger and replaces the inhaler on his face, probably adding another dose of chloroform as he does so. The patient's natural protective means being exhausted, he very quickly absorbs a fatal dose of chloroform, and we are subsequently told that his heart failed, that he afterwards gasped two or three times and then died. No care in measuring the chloroform or diluting it in a mechanical inhaler is any guide whatever to the amount of the anæsthetic a patient inhales or absorbs. Moreover, breathing through an inhaler is not natural breathing.

The Commission has shown that the key to the safe administration of chloroform is that the breathing be natural, so as to avoid struggling and any form of respiratory embarrassment; and, that it may be so, the anæsthetic must be administered in an open cone or cap, which is held far enough from the patient's face to avoid causing him to hold his breath or struggle, and into which he is at first made to blow after each inspiration, the cap being brought nearer to the face, and eventually quite close to it, as the chloroform begins to take effect and he breathes regularly.

Though fall of pressure is inseparable from chloroform administration, there is never the least danger if it falls regularly, and if the inhalation is stopped directly the state of the cornea shows that the patient is "under." Regularity of the blood pressure depends entirely upon regularity of the respiration. Any irregularity, therefore, in the fall of blood pressure during chloroform inhalation indicates irregularity of or interference with the respiration; and, *per contra*, any irregularity of or interference with the respiration at once causes irregularity in the fall of the blood pressure; but as long as the respiration is regular and not interfered with, the fall of the blood pressure will exactly correspond with it, and will cease long before a dangerous point is reached *if the inhalation is stopped when the cornea becomes insensitive*, or other signs show that the patient is "under." If the respiration is kept up without struggling, holding the breath, or asphyxia, chloroform may be given slowly or quickly, freely and with perfect confidence, without the slightest risk to the patient.

The Commission has demonstrated that the aim of the surgeon must be to give chloroform so that the blood pressure should fall regularly throughout the whole administration, and that the blood pressure can only be kept free from irregularities by absolute regularity of the breathing. The chloroform must, therefore, be inhaled in such a way that the breathing is natural and regular throughout. Feeling the pulse during chloroform inhalation is no guide whatever either to the blood pressure or to the one thing necessary for safety, which is, to keep it regular; and it has been shown above that the pulse is of no value as a sign of approaching danger, since it is only affected dangerously—(*a*) when the respiration has been interfered with, or (*b*) by an overdose. Lastly, in order to keep the breathing regular, the whole of the administrator's attention must be concentrated upon this point alone; and it is therefore clear, that if, as is now recommended in most of the text-books, part of the chloroformist's attention is to be given to the pulse, an important element of danger comes into the administration.

We can no longer contend, with regard to chloroform, that the results of clinical experience and of experimental research do not agree. The investigations of the Hyderabad Commission have brought to light a strikingly precise and complete agreement between both. In the *Lancet* of April 5, 1890, there is given a continuous series amounting to more than 45,000 cases of almost daily (and often several times a day) chloroform administration, extending from 1847 to 1890, in which the respiration alone was taken as a guide, without one death resulting. We thus see that in a long series of 45,000 cases, extending over forty years, in which the chloroformist's attention was concentrated on the respiration alone, and in which the chloroformists were students, there were no deaths at all; while in another series of 12,368 cases, in which a part of the chloroformist's attention was devoted to the pulse, and in which the chloroformists were specialists (anæsthetists) there were no less than 10 deaths—a fraction over one in every 1250 administrations. These clinical results correspond with the conclusions arrived at by the Hyderabad Commission, and are sufficient to show what a tremendous difference to the patient the mere method of administration may make.

The committee of the British Medical Association on anæsthetics do not agree to all of the conclusions of the Hyderabad Commission (*Lancet*, June 14, 1890). They also found that animals died under chloroform, when its administration was pushed, through paralysis of respiration; and though the heart continued to beat after cessation of respiration, the heart was to some extent simultaneously affected, and there were cases in which the heart appeared to fail at least as soon as, if not before, the breathing. The committee hold that it is quite possible for chloroform to kill by paralyzing the heart. Experiments were made upon rabbits and dogs, where the heart was exposed to view, and any desired vapor could be breathed into the lungs by artificial respiration. When chloroform was administered in this way, there is at once a most serious effect upon the heart; the right ventricle almost immediately begins to distend, the heart presently stops, while the right ventricle is engorged with blood. The contrast is striking when ether is used instead of chloroform, the conditions of the experiment being the same in the two cases. Ether may be given for an indefinite period without interfering with the heart. Unquestionably there may be sudden falls in the blood pressure during chloroform narcosis due to interference with the heart's action.

In practice it makes little difference whether the heart stops before or just after respiration, as those cases in which cardiac and respiratory arrest are almost simultaneous are, for the purposes of the clinician, the same as those in which heart-arrest precedes respiratory paralysis.

The committee think it unwise on the part of the Hyderabad Commission to convey to the public, even through the profession, the notion that the administration of chloroform is a proceeding in which there is practically no danger.